

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

13-05-2005

Applicant's or agent's file reference

304855wo/prs/jt

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/IB 2004/004252

International filing date (day/month/year)

22-12-2004

Priority date (day/month/year)

24-12-2003

International Patent Classification (IPC) or both national classification and IPC

G06F 17/30, G06F 11/14

Applicant

NOKIA CORPORATION ET AL

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further opinions, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/SE

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Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language, _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	<u>1-13</u>	YES
	Claims	<u></u>	NO
Inventive step (IS)	Claims	<u></u>	YES
	Claims	<u>1-13</u>	NO
Industrial applicability (IA)	Claims	<u>1-13</u>	YES
	Claims	<u></u>	NO

2. Citations and explanations:

Cited document

D1: US 6324544 B1

Statement

The present invention aims at overcoming the problem of synchronization in hierarchical file systems where it is not possible to track when a folder has been re-named.

According to the background description of D1, which is considered to be the prior-art-cited-document most closely related to the present invention, a number of problems present themselves when attempting to synchronize data files across diverse functional systems (e.g., across two different and normally incompatible computer architectures). For example, data files lack a unique, persistent object identifier associated with a file. The file name is typically used as the object identifier, and as such is very susceptible to identity loss simply by renaming the file. This affects many core data base operations, such as object copy, object move, and object compare operations, rendering all such operations suspect.

In D1 first and second computing devices each contain an object store which store objects indicative of file data. Synchronization components are provided to synchronize the objects while efficiently overcoming problems associated with synchronizing files.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of BOX V

In one embodiment, file renames are detected to avoid unnecessary duplication of files. In another embodiment, file conversions are performed while suppressing UI during a remote synchronization. Further, registered converters are identified to avoid unwanted loss of data when synchronizing a converted file.

FIG. 1 is a block diagram of a typical system or environment 10 of operation. System 10 includes mobile device 12 and desktop computer 14. Mobile device 12 includes first application program 16, second application program 18, corresponding first and second object stores 20 and 22, synchronization engine 24 and communication link 26. Desktop computer 14 includes first and second application programs 28 and 30, corresponding first and second object stores 32 and 34, synchronization engine 36 and communication link 38.

FIG. 6 is a more detailed block diagram of sync engine 24 on mobile device 12 and sync engine 36 on desktop 14. Sync engine 24 on mobile device 12 includes synchronization manager 140 which is coupled to a set of application programs, such as PIM sync provider 144 and file sync provider 146. PIM sync provider 144 is coupled to PIM object store 20, and file sync provider 146 is coupled to file object store 122.

Sync engine 36 on desktop 14 also includes a synchronization manager 148 coupled to an associated reference store 150 and also coupled to application programs, including PIM sync provider 152 and file sync provider 154. PIM sync provider 152 is coupled to PIM object store 32, and file sync provider 154 is coupled to file object store 34.

The list of handles maintained in reference store 150 is also used to determine which items need to be synchronized to mobile device 12 the next time mobile device 12 is connected to desktop computer 14. In making this determination, synchronization manager 148 also determines whether objects have been added to or deleted from the object stores so that appropriate additions and deletions can be made.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

Each handle stored in the reference store 150 should contain data that uniquely identifies an object--such as an object identifier, an ID number, a full pathname for a file system object, etc. This data should be persistent (in that it does not change for a particular object) and should not be reused for subsequently created objects. This data can be compared to determine whether two handles actually correspond to the same object.

The difference between what is claimed in claims 1-13 and the system described in D1, is that in the claims the data items to be synchronized are stored in specific folders in the client and the server, and that the client and server devices are being arranged so that the user of the devices cannot create subfolders within these folders.

In the system described in D1 the data items to be synchronized are stored in object stores (see reference numerals 20, 22, 32 and 34 in fig 1), and even if it is not explicitly stated in D1 these memories are probably arranged as some kind of file systems with folders. Furthermore, to arrange a device so that it is not possible for a user to create subfolders is only a minor mostly administrative difference which in itself cannot comprise anything inventive. Therefore, what is claimed in claims 1-13 is novel but considered not to involve an inventive step.